NAK1-BN23

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Examiner:
Hiroyuki Kado, et al.	Group Art Unit: 2674
Serial No.: 09/719,134	
Filed: December 7, 2000	
For: PLASMA DISPLAY PANEL WITH SUPERIOR LIGHT-EMITTING CHARACTERISTICS, AND METHOD AND APPARATUS FOR PRODUCING THE PLASMA DISPLAY PANEL	January 9, 2002 Irvine, California 92614

PETITION TO MAKE SPECIAL

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

In accordance with MPEP Section 708.02(viii), Applicant hereby requests that the above-identified application be made special and the fee in accordance with 37 C.F.R. Section 1.17(i) is submitted herewith.

It is believed that a Second Preliminary Amendment submitted herewith presents all claims directed to a single invention. If, however, it is determined that the claims are not directed to a single invention, Applicant hereby agrees to elect, without traverse, as a prerequisite to the granting of a special status.

An international search has been made in the Japanese Patent Office in International Application No. IA PCT/JP99/03189. A copy of the International Search Report, together with copies of the references cited, are already of record in this application.

The newly drafted claims correspond to the claims and subject matter that was examined by the Japanese Patent Office.

The International Search Report cited the European Patent Application No. 05/54172A (hereinafter "EPA-172") and the Japanese Laid Open Patent Application No. 2-018834 (hereinafter "JPA-834"). EPA-172 teaches that phosphor material that fill the spaces between the barriers can be dried and fired to obtain phosphor layers as set forth in Column 25, Lines 44-56. This reference does not teach that a bonding step is performed while dried gas is circulated in the inner space between the substrates, or does it mention the possible degradation of the fluorescent substance layer as a result of heat.

JPA-834 discloses a method of forming a phosphorous layer on a valve face of a small cathode-ray tube, such as a view finder, by applying phosphorous surrey and drying the applied surrey by introducing dry air. It does not teach, however, a bonding step performed while a dry gas is circulated in the inner space, nor is it concerned with the degradation of the fluorescent substance layer by heat.

In an examination procedure of the Japanese Laid Open Patent Application No. 11-168995 that corresponds to the present PCT Application, the *Yoshioka* Japanese Laid Open Patent Application No. 5-234512 was cited in relation to Claims 1-5, 7-21, 39-52 and 61-111, which correspond to the original claims in the present PCT Application.

Yoshioka related to a production method for a gas discharge display panel and sought to provide a procedure for reducing the amount of solvents and gases that remain in

the gas discharge display panel. The proposed procedure had a substrate and an evacuation/gas introducing apparatus connected to each other by a glass tube. The substrates were heated to a temperature no higher than the bonding temperature, while a space formed between the substrates or it's surroundings are at an atmosphere of dry gas. The gas discharge panel is then heated to the bonding temperature to be sealed, the heating temperature is lowered for activation while evacuation of the space between the panels is performed, and the space is filled with the discharge gas.

An abstract copy in English of the *Yoshioka* Japanese Laid Open Patent Application No. 5-234512 with translations of the chart is attached hereto.

As will be set forth, it is believed that the claims submitted herewith more than adequately distinguish over any combination of the cited prior art.

New Claim 192 solves a conventional problem where the blue fluorescent substances are degraded by heat as steam vapors are released into the narrow inner space between the substrates during the bonding process. Such degradation leads to a reduction in the light-emitting intensity and the chromaticity of emitted light. Claim 192 is directed to a PDP production method comprising: a bonding step for putting a front panel and a back panel together to form inner space between the panels, and bonding the front panel and the back panel by maintaining a bonding temperature equal to or higher than a temperature at which the sealing material softens, a fluorescent substance layer being formed on at least one of the front panel and the back panel, a sealing material layer being formed on at least one of the front panel and the back panel, wherein the bonding step is performed while the dry gas is circulated in the inner space. This construction prevents the light emitting

characteristics from being degraded due to the degradation of the fluorescent substance layer as the adsorbed steam vapors are released into the inner space.

Neither EPA-172 or JPA-834 disclose that a bonding step is performed while the dry gas is circulated in the inner space, or mention the degradation of the fluorescent substance layer by heat.

The *Yoshioka* reference does not disclose that a bonding step is performed while the dry gas is circulated in the inner space. Although the *Yoshioka* reference discloses that the inside or surroundings of a panel is brought into a gas atmosphere, including one or more kinds of dry nitrogen, oxygen, hydrogen, or rare gas, and the substrates are heated at a temperature equal to or lower than a sealing temperature, it does not disclose that the dry gas is circulated in the inner space or the surroundings of the panel while the bonding process is performed (after the temperature of the panel reaches a temperature equal to or lower than the bonding temperature). In addition, although the *Yoshioka* reference mentions degradation of the panel discharge characteristics, it does not mention the degradation of the fluorescent substance layer by heat.

New Claim 211 is directed to a PDP production method comprising: a bonding step for putting a front panel and a back panel together to form an inner space between the panels, and bonding the front panel and the back panel by maintaining a bonding temperature equal to or higher than a temperature at which the sealing material softens, a fluorescent substance layer being formed on at least one of the front panel and the back panel; and a heating step for heating the bonded front panel and the back panel to a temperature higher than a room temperature while a dry gas is circulated in the inner space. With this consideration, even if the fluorescent substance layer is degraded by heat in the

bonding step, the fluorescent substance layer recovers from any degradation during the heating step, thereby restoring the light emitting characteristics.

New Claim 221 is directed to a PDP production method comprising: a heating step for heating a first panel while an MgO layer formed on the first panel is in contact with a dry gas; and a bonding step for, after the heating step, putting the first panel and a second panel together, and bonding the first panel and the second panel with a fluorescent substance layer being formed on the second panel. With this construction, even if water has been adsorbed on the MgO layer beforehand, the water is released from the MgO layer and the amount of the water is reduced in the heating step, and accordingly, the amount of water released into the inner space in the bonding step is reduced, providing an effect of preventing the light emitting characteristics from being degraded due to the degradation of the fluorescent substance layer in the bonding step.

The PCT references do not disclose that after heating a first panel while an MgO layer formed on the first panel is in contact with a dry gas, the first panel is bonded with a second panel, nor mentions the degradation of the fluorescent substance layer by heat. The *Yoshioka* reference does not disclose that after heating a first panel while an MgO layer formed on the first panel is in contact with a dry gas, the first panel is bonded with a second panel, and does not mention the degradation of the fluorescent substance layer by heat.

New Claim 226 is directed to a PDP production method comprising: a preparative heating step for heating a front panel and a back panel in an atmosphere of dry gas while a space between the sides of the panels facing each other is opened, a fluorescent substance layer being formed on at least one of the front panel and the back panel, a sealing material layer being formed on ate least one of the front panel and the back panel; and a bonding step

for, after the preparative heating step, putting the front panel and the back panel together to form an inner space between the panels, and bonding the front panel and the back panel by maintaining a bonding temperature equal to or higher than a softening point of the sealing material. With this construction, even if water has been adsorbed on the front and back panels beforehand, the water is released from the panels and the amount of the water is reduced in the preparative heating step, and accordingly, the amount of water released into the inner space in the bonding step is reduced, providing an effect of preventing the fluorescent substance layer from being degraded by heat in the bonding step.

Neither EPA-172 or JPA-834 disclose that after preparatively heating a front panel and a back panel in an atmosphere of dry gas while a space between the sides of the panels facing each other is opened, the panels are bonded, or do they mention the degradation of the fluorescent substance layer by heat.

The *Yoshioka* reference does not disclose that after preparatively heating a front panel and a back panel in an atmosphere of dry gas while a space between the sides of the panels facing each other is opened, the panels are bonded. While the *Yoshioka* reference discloses that the inner space or the surroundings of the panel are in an atmosphere of dry gas before the bonding process, this is done while the two panels are put together (without opening a space between the panels). In addition, the *Yoshioka* reference does not mention the degradation of the fluorescent substance layer by heat.

New Claim 245 is directed to a PDP production method comprising: a bonding step for putting a front panel and a back panel together to form inner space between the panels, and bonding the front panel and the back panel by maintaining a bonding temperature equal to or higher than a temperature at which the sealing material softens, a fluorescent substance

layer being formed on at least one of the front panel and the back panel, and a sealing material layer being formed on at least one of the front panel and the back panel, wherein the bonding step is performed while the dry gas is circulated in the inner space; and an exhausting step for exhausting gases from the inner space while maintaining exhaust temperature for the bonded panels higher than a room temperature, wherein the exhausting step is started before the temperature of the bonded panels reduces to the room temperature.

New Claim 245 has the same features as new Claim 192. Accordingly, new Claim 245 is also distinguishable. New Claim 245 also provides an effect of reducing the time required and energy consumed for heating between the bonding step and the exhausting step.

New Claim 248 is directed to a PDP production method comprising: a fluorescent substance layer forming step for forming a fluorescent substance layer on at least one of: a side of a front panel facing a back panel; and a side of the back panel facing the front panel; a sealing material applying step for applying a sealing material onto at least one of: the side of the front panel facing the back panel; and the side of the back panel facing the front panel; a temporary baking step for putting a front panel and a back panel together to form inner space between the panels, and temporarily baking the front panel and the back panel while circulating a dry gas in the inner space and maintaining a temporary baking temperature; and a bonding step for, after the temporary baking step, bonding the front panel and the back panel by maintaining a bonding temperature equal to or higher than a temperature at which the sealing material softens, wherein the bonding step is started before the temperature of the panels heated in the temporary baking step reduces to the room temperature. With this construction, even if water has been adsorbed on the front and back

panels beforehand, the water is released from the panels and the amount of the water is reduced in the temporary baking step, and accordingly, the amount of water released into the inner space in the bonding step is reduced, providing an effect of preventing the fluorescent substance layer from being degraded by heat in the bonding step.

New Claim 248 also provides an effect of reducing the time required and energy consumed for the heating between the temporary baking step and the bonding step.

Neither EPA-172 or JPA-834 disclose that after temporarily baking the front panel and the back panel while circulating a dry gas in the inner space and maintaining a temporary baking temperature, the panels are bonded, or mentions the degradation of the fluorescent substance layer by heat.

Although the *Yoshioka* reference discloses that the inner space or the surroundings of the panel are in an atmosphere of dry gas before the bonding process, it does not disclose that the front panel and the back panel are temporarily baked while circulating a dry gas in the inner space and maintaining a temporary baking temperature. In addition, the *Yoshioka* reference does not mention the degradation of the fluorescent substance layer by heat.

New Claim 256 is directed to a PDP production method comprising: a fluorescent substance layer forming step for forming a fluorescent substance layer on at least one of: a side of a front panel facing a back panel; and a side of the back panel facing the front panel; a sealing material applying step for applying a sealing material onto at least one of: the side of the front panel facing the back panel; and the side of the back panel facing the front panel; a temporary baking step temporarily baking the panels onto which the sealing material has been applied; a preparative heating step for, after the temporary baking step, heating the front panel and the back panel in an atmosphere of dry gas while a space

between the sides of the panels facing each other is opened; and a bonding step for, after the preparative heating step, putting the front panel and the back panel together, and bonding the front panel and the back panel by maintaining a bonding temperature equal to or higher than a softening point of the sealing material, wherein the bonding step is started before the temperature of the panels heated in the preparative heating step reduces to the room temperature.

New Claim 256 includes the same features as new Claim 226. Accordingly, new Claim 256 is distinguishable. New Claim 256 also provides an effect of reducing the time required and energy consumed for the heating between the temporary baking step and the bonding step.

New Claim 244 is directed to a PDP production apparatus for putting a front panel and a back panel together with a fluorescent substance layer formed on at least one of: a side of the front panel facing the back panel; and a side of the back panel facing the front panel and with a sealing material formed between the front panel and the back panel, and bonding the panels to form inner space between the panels by heating the panels and softening the sealing material, the PDP production apparatus comprising: a heating mechanism for heating the front panel and the back panel; a moving mechanism for moving the front panel and the back panel having been put together to separate the panels from each other along a certain path and putting the front panel and the back panel by moving the panels in an opposite direction.

New Claim 244 provides a production apparatus that is suitable for implementing the reproduction method provided in new Claim 226.

New Claims 267-274 define characteristics of a blue fluorescent substance layer in a PDP that includes a plurality of cells formed between a pair of panels parallel to each other, the plurality of cells including blue cells in each of which the blue fluorescent substance layer is formed, and the plurality of cells being filled with a gas medium. These Claims are directed to characteristics observed in PDP's produced by such PDP production methods.

As set forth above, it is believed that the known references cited in the PCT Search Report and cited in the prosecution of the corresponding Japanese priority application fail to teach the advantageous features set forth in the presently pending claims.

It is believed that all the requirements to have the present application made special have been complied with. If there are any questions or additional requirements, the undersigned attorney would appreciate a telephone conference.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231 on January 9, 2002.

By: Marc Fregoso

Marc Fregoso

Signature

Date: January 9, 2002

Respectfully submitted,

PRICE AND GESS

Joseph W. Price
Registration No. 25,124
2100 S.E. Main St., Suite 250
Irvine, California 92614
Telephone: 949/261-8433